

Serial No.: 10/805,576

IN THE CLAIMS:

1. (Currently amended) A medical article comprising: (a) a ceramic or metallic region whose surface comprises a plurality of depressions; (b) a multilayer coating region comprising multiple polyelectrolyte layers deposited over said surface wherein each polyelectrolyte layer has a net charge opposite in sign from the adjacent layers; and (c) a therapeutic agent disposed within the depressions beneath ~~disposed beneath or within~~ said multilayer coating region, wherein the multilayer coating region extends over the therapeutic-agent-containing surface depressions to provide enclosed cavities which are occupied by the therapeutic agent.
2. (Withdrawn) The medical article of claim 1, wherein the multilayer coating region extends into the surface depressions of the ceramic or metallic region.
3. (Cancelled)
4. (Original) The medical article of claim 1, wherein said multilayer coating region is biodegradable.
5. (Original) The medical article of claim 1, wherein said multilayer coating comprises a polycation layer selected from polyallylamine, polyethyleneimine, poly(dimethyl diallyl ammonium chloride), protamine sulfate, chitosan, gelatin, spermidine, and albumin and a polyanion layer selected from poly(styrene sulfonic acid), poly(aniline sulfonic acid), polyacrylic acid, sodium alginate, polystyrene sulfonate, eudragit, gelatin, hyaluronic acid, carrageenan, chondroitin sulfate, carboxymethylcellulose.
6. (Original) The medical article of claim 1, wherein said multilayer coating contains from 2 to 100 polyelectrolyte layers.
7. (Original) The medical article of claim 1, wherein said medical article comprises a plurality of multilayer coating regions.

Serial No.: 10/805,576

8. (Withdrawn) The medical article of claim 1, wherein said medical article comprises first and second multilayer coating regions that differ from each other with respect to the number or the composition or both the number and composition of the polyelectrolyte layers contained therein.

9. (Original) The medical article of claim 1, wherein said ceramic or metallic region is a component of said medical article.

10. (Original) The medical article of claim 1, wherein said ceramic or metallic region is disposed as a layer over at least a portion of a medical article substrate.

11. (Original) The medical article of claim 1, wherein said medical article comprises a plurality of ceramic or metallic regions.

12. (Previously presented) A medical article comprising: (a) a ceramic region whose surface comprises a plurality of depressions; (b) a biodegradable polyelectrolyte multilayer coating region comprising multiple polyelectrolyte layers deposited over said surface wherein each layer has a net charge opposite in sign from the adjacent layers; and (c) a therapeutic agent disposed beneath or within said multilayer coating region.

13. (Original) The medical article of claim 12, wherein said ceramic region is a porous ceramic region.

14. (Withdrawn) The medical article of claim 13, wherein said medical article comprises a plurality of porous ceramic regions of different composition and porosity.

15. (Original) The medical article of claim 13, wherein said porous ceramic region has an average pore size ranging from 0.3 to 100 nm.

Serial No.: 10/805,576

16. (Original) The medical article of claim 13, wherein said porous ceramic region comprises a ceramic material selected from aluminum oxide, titanium oxide, iridium oxide and calcium phosphate ceramics.

17. (Original) The medical article of claim 13, wherein said medical article is a stent.

18. (Original) The medical article of claim 1, wherein said medical article comprises a metallic region.

19. (Original) The medical article of claim 18, wherein said depressions are laser cut depressions.

20. (Previously presented) A medical article comprising: (a) a metallic region whose surface comprises a plurality of depressions; (b) a biodegradable polyelectrolyte multilayer coating region comprising multiple polyelectrolyte layers deposited over said surface, wherein each layer has a net charge opposite in sign from the adjacent layers; and (c) a therapeutic agent disposed beneath or within said multilayer coating region, wherein said depressions are through-holes.

21. (Original) The medical article of claim 18, wherein said medical article is a stent.

22. (Original) The medical article of claim 1, wherein said therapeutic agent is selected from anti-thrombotic agents, anti-proliferative agents, anti-inflammatory agents, anti-migratory agents, agents affecting extracellular matrix production and organization, antineoplastic agents, anti-mitotic agents, anesthetic agents, anti-coagulants, vascular cell growth promoters, vascular cell growth inhibitors, a cholesterol-lowering agents, vasodilating agents, and agents that interfere with endogenous vasoactive mechanisms.

23. (Original) The medical article of claim 1, wherein said medical article comprises a plurality of therapeutic agents.

Serial No.: 10/805,576

24. (Original) The medical article of claim 7, wherein said medical article comprises a first therapeutic agent disposed beneath or within a first multilayer coating region and a second therapeutic agent disposed beneath or within a second multilayer coating region.

25. (Original) The medical article of claim 1, wherein said medical article is an implantable or insertable medical device.

26. (Original) The medical article of claim 25, wherein said implantable or insertable medical device is a stent.

27. (Original) The medical article of claim 25, wherein said implantable or insertable medical device is selected from a catheter, a guide wire, a filter, a stent graft, a vascular graft, a vascular patch, a shunt, a vena cava filter, a pacemaker, a pacemaker lead, and an orthopedic implant.

28. (Original) The medical article of claim 25, wherein said implantable or insertable medical device is adapted for implantation or insertion into the vasculature.

29. (Original) The medical article of claim 25, wherein said implantable or insertable medical device is adapted for implantation or insertion into the esophagus, trachea, colon, biliary tract, ureter, urethra, urinary tract, prostate or brain.

30. (Original) The medical article of claim 25, wherein said multilayer coating region is biodegradable.

31. (Previously presented) A medical article comprising: (a) a ceramic or metallic region whose surface comprises a plurality of depressions; (b) a multilayer coating region comprising multiple polyelectrolyte layers deposited over said surface; and (c) a therapeutic agent disposed beneath or within said multilayer coating region, wherein said multilayer coating further comprises metal or metal oxide nanoparticles.

Serial No.: 10/805,576

32. (Withdrawn) A medical article comprising: (a) a ceramic or metallic region, (b) a multilayer coating region comprising multiple polyelectrolyte layers deposited over a surface of said ceramic or metallic region, said multilayer coating region comprising a plurality of protuberances; and (c) a therapeutic agent disposed beneath said protuberances.

33. (Previously presented) The medical article of claim 1, wherein said multilayer coating comprises 3 or more polyelectrolyte layers.

34. (Previously presented) A method of making the medical article of claim 33, comprising: depositing a first polyelectrolyte layer having a first net charge over the substrate, depositing a second polyelectrolyte layer having a second net charge that is opposite in sign to the first net charge over the first polyelectrolyte layer, and depositing additional polyelectrolyte layers, each having a net charge that is opposite in sign to the preceding layer.

35 (Currently amended). ~~The method of claim 34.~~ A method of making a medical article that comprises: (a) a ceramic or metallic region whose surface comprises a plurality of depressions; (b) a multilayer coating region comprising 3 or more polyelectrolyte layers deposited over said surface wherein each polyelectrolyte layer has a net charge opposite in sign from the adjacent layers; and (c) a therapeutic agent disposed beneath or within said multilayer coating region, said method comprising (a) inserting a disintegrable material into said depressions to form filled depressions, (b) depositing said polyelectrolyte layers over the filled depressions by a method comprising depositing a first polyelectrolyte layer having a first net charge over the substrate, depositing a second polyelectrolyte layer having a second net charge that is opposite in sign to the first net charge over the first polyelectrolyte layer, and depositing additional polyelectrolyte layers, each having a net charge that is opposite in sign to the preceding layer, (c) subsequently removing the disintegrable material from the depressions and (d) subsequently introducing said therapeutic agent into the depressions.

36. (Cancelled)

Serial No.: 10/805,576

37 (Currently amended). The medical article of ~~claim 36~~ claim 1, wherein said depressions are pores having an average pore size ranging from 2-50 nanometers.

38 (Currently amended). The medical article of ~~claim 36~~ claim 1, wherein said depressions are pores having an average pore size ranging from 50 nanometers to 5 microns.

39 (Previously presented). The medical article of claim 1, wherein said substrate has a net surface charge, inherent or applied.

40 (Previously presented). The medical article of claim 30, wherein said multilayer coating comprises a polycation layer selected from protamine sulfate, chitosan, gelatin, spermidine, and albumin and a polyanion layer selected from sodium alginate, gelatin, hyaluronic acid, carrageenan, and chondroitin sulfate.

41 (Previously presented). The medical article of claim 1, wherein each polyelectrolyte layer comprises a single polyelectrolyte species.